

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-30. (CANCELED)

31. (CURRENTLY AMENDED) The method of claim [[29]] 48 wherein B¹ and B² are the same or different C-or O-monosaccharides and glycosides selected from the group consisting of glucose, mannose, fucose, galactose, glucosamine, mannosamine, galactosamine, and sialic acid, oligosaccharides containing 1 to 10 furanose or pyranose units, amino acids, peptides containing 1 to 20 amino acid residues, flavonoids and isoflavonones C- or O- glucosides selected from the group consisting of rutin, neohesperidin dihydrochalone, phloridizin, hesperidin, hesperidin methyl chalcone, naringenin, and esculin, carminic acids selected from the group consisting of carmine, and 18b-glycyrrhetic acid.

32. (CURRENTLY AMENDED) The method of claim [[29]] 48 wherein L¹ and L² are the same or different neutral polymers or copolymers selected from the group consisting of polyethyleneglycol, polysorbates, polyglycerols, polyvinylalcohols, polyglycolate, and polylactate wherein the molecular weight of the said polymer and copolymer range from 1,000 to 10,000.

33. (CURRENTLY AMENDED) The method of claim [[29]] 48 wherein said lamellar structure is selected from the group consisting of $\text{CH}_3-(\text{CH}_2)_e\text{-X}$, $\text{CH}_3-(\text{CF}_2)_e\text{-X}$, $\text{CF}_3-(\text{CF}_2)_e\text{-X}$, $\text{CF}_3-(\text{CF}_2)_f\text{-O}-(\text{CH}_2)_g\text{-X}$, $\text{CH}_3-(\text{CH}_2)_f\text{-S}-(\text{CH}_2)_g\text{-X}$, $\text{CH}_3-(\text{CH}_2)_f\text{-S-S}-(\text{CH}_2)_g\text{-X}$, $\text{CH}_3-(\text{CH}_2)_g\text{CO}_2(\text{CH}_2)_h\text{-X}$, $\text{CH}_3-(\text{CH}_2)_f\text{CONH}(\text{CH}_2)_g\text{-X}$, $\text{CH}_3-(\text{CH}_2)_f\text{NHCONH}(\text{CH}_2)_g\text{-X}$, $\text{CH}_3-(\text{CH}_2)_f\text{OCONH}(\text{CH}_2)_g\text{-X}$, $\text{CH}_3-(\text{CH}_2)_f\text{NH}(\text{CH}_2)_g\text{-X}$, $\text{CH}_3-(\text{CH}_2)_f\text{N}[(\text{CH}_2)_g]_2\text{-X}$, $\text{CH}_3-(\text{CH}_2)_f\text{SO}_2(\text{CH}_2)_g\text{-X}$, $\text{CH}_3-(\text{CH}_2)_f\text{SO}_2(\text{CH}_2)_g\text{-X}$, $\text{CH}_3-(\text{CH}_2)_f\text{N}[(\text{CH}_2)_g]_2\text{-X}$, $\text{CH}_3-(\text{CH}_2)_m\text{NH}(\text{CH}_2)_f\text{CO}_2(\text{CH}_2)_g\text{-X}$, $\text{CH}_3-((\text{CH}_2)_f)_2\text{N}(\text{CH}_2)_g\text{CONH}(\text{CH}_2)_h\text{-}$, $\text{RO}_2\text{CCH}_2(\text{CH}_2)_g\text{CO}_2\text{R}$, wherein f , g , and h range from 1 to 5; X is selected from the group consisting of carboxylate, sulfonate, sulfate, phosphate, and phosphonate; Y is selected from the group consisting of $-(\text{CH}_2)_k\text{-X}$, $-\text{NHCO}(\text{CH}_2)_k\text{-X}$, $-\text{OCO}(\text{CH}_2)_k\text{-X}$, $-\text{CH}_2\text{OCO}(\text{CH}_2)_2\text{-CO}_2^-$; R is a normal alkyl radical containing 16 to 24 carbon atoms; and k varies from 2 to 6.

34. (CURRENTLY AMENDED) The method of claim [[29]] 48 wherein A^1 and A^2 are the same or different and are selected from the group consisting of $\text{CH}_3(\text{CH}_2)_a\text{-W}$, $\text{CH}_3(\text{CH}_2)_a\text{-O}-(\text{CH}_2)_b\text{-W}$, $\text{CH}_3(\text{CH}_2)_a\text{-S}-(\text{CH}_2)_b\text{-W}$, and $[[R^1\text{O}_2\text{CCCH}_2(\text{CW})\text{CO}_2R^1]]$, $R^1\text{O}_2\text{CCH}_2(\text{CHW})\text{CO}_2R^1$, wherein a and b range from 16 to 24, W is $-\text{O}-$, $-\text{O}_2\text{C}-$, $-\text{CO}_2-$, and $-\text{NHCO}-$.

35. (CURRENTLY AMENDED) The method of claim [[29]] 48 wherein B^1 and B^2 are the same or different and are selected from the group consisting of glucose, galactose, fucose, sialic acid and carminic acid.

36. (CURRENTLY AMENDED) The method of claim [[29]] 48 wherein L^1 and L^2 are the same or different and is polyethylene glycol having a molecular weight in the range of 1,000 to 4,000.

37. (CURRENTLY AMENDED) The method of claim [[29]] 48 wherein said lamellar structure is a compound selected from the group consisting of $CH_3-(CH_2)_e-X$, $CH_3-(CH_2)_fCONH(CH_2)_g-X$, $CH_3-(CH_2)_fNHCONH(CH_2)_g-X$, $CH_3-(CH_2)_fOCONH(CH_2)_g-$, $CH_3-(CH_2)_fNH(CH_2)_g-$, $R^2O_2CCH_2(CHY)CO_2R^2$, and $R^2O_2CCH_2CH_2(CHY)CO_2R^2$; R^2 is a normal alkyl radical containing 16 to 24 carbon atoms; X is selected from the group consisting of carboxylate, sulfate, or phosphate; Y is selected from the group consisting of $-(CH_2)_k-X$, $-NHCO(CH_2)_k-X$ and $CH_2OCO(CH_2)_2-CO_2^-$; e ranges from 16 to 32, and f, g, and k range from 1 to 5.

38. (CURRENTLY AMENDED) The method of claim [[29]] 48 wherein said effector molecule is selected from the group consisting of an echogenic agent, an ultrasound agent, a radionuclide, a radioligand, a paramagnetic agent, a chromophore, an optical agent, and an x-ray opacification agent ~~a cytotoxic agent~~.

39. (ORIGINAL) The method of claim 38 wherein said effector molecule is an echogenic agent selected from the group consisting of perfluoropropane, perfluorobutane, sulfur hexafluoride, tetrafluoromethane, hexafluoroethane, octafluoropropane, decafluorobutane, dodecafluoropentane, and perfluorohexane.

40. (ORIGINAL) The method of claim 38 wherein said effector molecule is a radionuclide selected from the group consisting of I-123, I-131, Tc-99m, Re-186, Re-188, SM-152, Ho-155, Bi-202, and Lu-157.

41. (ORIGINAL) The method of claim 38 wherein said effector molecule is a paramagnetic agent selected from the group consisting of Gd-DTPA, Gd-DOTA, Gd-DTPA-*bis*(methoxyethyl)amide, and Mn-EDTA.

42. (ORIGINAL) The method of claim 38 wherein said effector molecule is an optical agent selected from the group consisting of a fluorophore that absorbs light in the range of 300 - 1200 nm, and a chromophore that absorbs light in the range of 300 - 1200 nm.

43. (ORIGINAL) The method of claim 38 wherein said effector molecule is a cytotoxic agent selected from the group consisting of fluorouracil, fluorouridine, sulfisoxazole, N'-(w-thiazolyl)sulfanilamide, sulfmethoxazole, and sulfisomidine.

44. (ORIGINAL) The method of claim 38 wherein said effector molecule is an optical agent selected from the group consisting of fluorescein and indocyanine green.

45. (ORIGINAL) The method of claim 38 wherein said effector molecule is perfluorobutane.

46. (ORIGINAL) The method of claim 38 wherein said effector molecule is I-131 or Tc-99m.

47. (ORIGINAL) The method of claim 38 wherein said target is selected from the group consisting of tumor cells, thrombi, monocytes, macrophages, eosinophils, neutrophils, lymphocytes, vascular endothelium, myocardial cells, hepatocytes, and an extracellular matrix surrounding any of the said cells.

48. (CURRENTLY AMENDED) A method of targeting an effector molecule to a target site in a patient, said method comprising

providing to said patient an effective amount of a physiologically acceptable composition comprising an organized mobile multicomponent conjugate (OMMC) assembly comprising a lamellar structure selected from at least one [[component of table 3]] of CH₃-(CH₂)_e-X, CH₃-(CF₂)_e-X, CF₃-(CF₂)_e-X, CF₃-(CF₂)_f-O-(CH₂)_g-X, CH₃-(CH₂)_f-S-(CH₂)_g-X, CH₃-(CH₂)_f-S-S-(CH₂)_g-X, CH₃-(CH₂)_g-CO₂(CH₂)_h-X, CH₃-(CH₂)_f-CONH(CH₂)_g-X, CH₃-(CH₂)_f-NHCONH(CH₂)_g-X, CH₃-(CH₂)_f-OCONH(CH₂)_g-X, CH₃-(CH₂)_f-NH(CH₂)_g-X, CH₃-(CH₂)_f-N[(CH₂)_g]₂-X, CH₃-(CH₂)_f-SO(CH₂)_g-X, CH₃-(CH₂)_f-SO₂(CH₂)_g-X, CH₃-(CH₂)_m-NH(CH₂)_l-CO₂(CH₂)_g-X, or CH₃-[(CH₂)_l]₂N(CH₂)_g-CONH(CH₂)_h-X; salts of docosanoic acid, tetracosanoic acid, hexacosanoic acid, octacosanoic acid or triacontanoic acid; R²O₂CCH₂(CHY)CO₂R², or R²O₂CCH₂CH₂(CHY)CO₂R²; where e=16-32, f, g, h =1-15, X = carboxylate, sulfonate, sulfate, phosphate, phosphonate; R² is a normal alkyl radical containing 16-24 carbon atoms, Y= -(CH₂)_k-X₁.

-NHCO(CH₂)_k-X₁, -OCO(CH₂)_k-X₁, or -CH₂OCO(CH₂)₂-CO₂⁻; k=1-6, and
X₁=carboxylate, sulfate, or phosphate, said lamellar structure defining a void and
having incorporated at least two binding compounds B¹ and B² independently
selected from at least one [[component of table 2]] of amino acids, peptides (1-20
amino acids), peptidomimics, monosaccharides, oligosaccharides (1-10),
glycomimics, glycopeptides; anionic compounds; C- or O- monosaccharides and
glycosides; flavonoids, isoflavonones; or C- or O- glucosides; B₁ bound to said
structure by anchor region A¹ and B₂ bound to said structure by anchor
region A², the anchors independently selected from at least one [[component of
table 1]] of CH₃(CH₂)_a-W, CF₃(CH₂)_a-W, CF₃(CF₂)_a-W, CF₃(CF₂)_aCH₂CH₂-W,
CH₃(CH₂)_a-O-(CH₂)_b-W, CF₃(CF₂)_a-O-(CH₂)_b-W, CH₃(CH₂)_a-S-(CH₂)_b-W,
CH₃(CH₂)_a-S-S-(CH₂)_b-W; or R¹O₂CCH₂(CHW)CO₂R¹; where a, b=16-32; R¹ is a
normal alkyl radical containing 16-24 carbon atoms, and W = -O-, -CO-, -CO₂-
-O₂C-, -OCO-, -O₂CO-, -S-, -SO-, -OSO-, -OSO₂-, -SO₂-, -OPO₂H-, -NH-, -NHCO-,
-NHCS-, -NHSO₂-, -PO₂H-, -PO₂-, or -OPO₂-; B₁ and A₁ linked via linker L¹
and B₂ and A₂ linked via linker L², the linkers independently selected from at
least one [[component of table 4]] of polysorbates, polyglycerols, polypeptides,
polynucleotides, polysaccharides, polyvinylpyrrolidones, polyvinylalcohols,
polyethyleneglycols, polyglycolate, polylactate, poly(ethyleneglycol)_p (p=40-150),
and an effector molecule, said B¹ and B² binding to at least first and second
affinity sites in said target site, wherein a position of B¹ and B² relatively self-
adjust to form an OMMC ensemble resulting in [[enhanced]] cooperative binding

of B¹ and B² to said affinity sites, wherein said effector molecule is provided to the target site.

49. (PREVIOUSLY PRESENTED) The method of claim 48 wherein said effector molecule is an imaging agent.

50. (CURRENTLY AMENDED) The method of claim 48 wherein said effector molecule is selected from the group consisting of a fluorocarbon gas, a fluorocarbon liquid, and a fluorophore, ~~a paramagnetic agent, a chromophore, a radioligand, an x-ray opacification agent, and combinations thereof.~~

51. (CANCELED)

52. (PREVIOUSLY PRESENTED) The method of claim 48 wherein B1 is at least one saccharide and B2 is at least one anionic component.

53. (PREVIOUSLY PRESENTED) The method of claim 48 wherein B2 is selected from the group consisting of a carboxylate, a sulfate, and combinations thereof.

54. (CANCELED)

55. (CURRENTLY AMENDED) The method of claim 48 wherein the effector molecule is selected from the group consisting of a chemotherapeutic agent, an antibiotic, and a cytotoxic agent.
56. (PREVIOUSLY PRESENTED) The method of claim 48 wherein A1 and A2 are the same or different and are selected from the group consisting of $\text{CH}_3(\text{CH}_2)_a\text{-W}$ wherein $a=17\text{-}31$ and W is a carboxylate salt, a sulfonate salt, a sulfate salt, a phosphonate salt, a phosphate salt, an ester, an amide, a sulfonamide, and a phosphate ester.
57. (PREVIOUSLY PRESENTED) The method of claim 56 wherein W is selected from the group consisting of a sodium salt, an ester, or an amide of fatty acids selected from the group consisting of octadecanoic (C_{18}), nonadecanoic acid (C_{19}), eicosanoic acid (C_{20}), heneicosanoic acid (C_{21}), docosanoic acid (C_{22}), tricosanoic acid (C_{23}), tetracosanoic acid (C_{24}), pentacosanoic acid (C_{25}), hexacosanoic acid (C_{26}), heptacosanoic acid (C_{27}), octacosanoic acid (C_{28}), nonacosanoic acid (C_{29}), triacontanoic acid (C_{30}), and hentriacontanoic acid (C_{31}).
58. (PREVIOUSLY PRESENTED) The method of claim 48 wherein B1 is selected from the group consisting of a -C- or an -O- saccharide, a saccharosamine, sialic acid, lactose, sucrose, maltose, and salts thereof, and B2 is selected from the group consisting of $-(\text{CH}_2)_d\text{-CO}_2^-$, $-(\text{CH}_2)_d\text{-SO}_3^-$, $-(\text{CH}_2)_d\text{-OSO}_3^-$ and $-(\text{CH}_2)_d\text{-OPO}_3^{2-}$ wherein $d=1\text{-}10$; -AryISO_3^- ; DTPA, EDTA, DOTA, EGTA, amino acids, succinic acid, maleic acid, polypeptides, and salts and derivatives thereof.

59. (PREVIOUSLY PRESENTED) The method of claim 58 wherein the -C- or -O- saccharide is selected from the group consisting of glucose, mannose, fucose, and galactose.

60. (PREVIOUSLY PRESENTED) The method of claim 58 wherein the saccharosamine is selected from the group consisting of glucosamine, galactosamine, fucosamine, and mannosamine.

61. (PREVIOUSLY PRESENTED) The method of claim 48 wherein L1 is poly(ethyleneglycol)_p (p= 40-50) and L2 is poly(ethyleneglycol)_p (p= 40-50).

62. (PREVIOUSLY PRESENTED) The method of claim 48 wherein L1, L2 are bound to A1, A2 and B1, B2 through an amide bond, an ester bond, an ether bond, or a thioether bond.

63. (PREVIOUSLY PRESENTED) The method of claim 48 wherein L1, L2 are bound to B1, B2 through an activated succinylated linker.

64. (PREVIOUSLY PRESENTED) The method of claim 48 wherein A1, A2 are salts or derivatives of at least one of octadecanoic (C₁₈) acid, docosanoic acid (C₂₂), or octacosanoic acid (C₂₈).

65. (PREVIOUSLY PRESENTED) The method of claim 48 wherein A1 is a succinic acid ester of a PEG[50]stearate L1 and A2 is a fucossuccinamide ester of a PEG[50]stearate L2, the effector molecule is perfluorobutane gas, and the lamellar structure comprises docosanoic and octacosanoic acids sodium salts.

66. (PREVIOUSLY PRESENTED) The method of claim 48 wherein at least one of B1, B2 has an anionic functional group.

67. (CURRENTLY AMENDED) A method of targeting an effector molecule to a target site in a patient, said method comprising

providing to said patient an effective amount of a physiologically acceptable composition comprising an organized mobile multicomponent conjugate (OMMC) assembly comprising a lamellar structure selected from at least one [[component of table 3]] of CH₃-(CH₂)_e-X, CH₃-(CF₂)_e-X, CF₃-(CF₂)_e-X, CF₃-(CF₂)_f-O-(CH₂)_g-X, CH₃-(CH₂)_f-S-(CH₂)_g-X, CH₃-(CH₂)_f-S-S-(CH₂)_g-X, CH₃-(CH₂)_g-CO₂(CH₂)_h-X, CH₃-(CH₂)_f-CONH(CH₂)_g-X, CH₃-(CH₂)_f-NHCONH(CH₂)_g-X, CH₃-(CH₂)_f-OCONH(CH₂)_g-X, CH₃-(CH₂)_f-NH(CH₂)_g-X, CH₃-(CH₂)_f-N[(CH₂)_g]₂-X, CH₃-(CH₂)_f-SO(CH₂)_g-X, CH₃-(CH₂)_f-SO₂(CH₂)_g-X, CH₃-(CH₂)_m-NH(CH₂)_h-CO₂(CH₂)_g-X, CH₃-(CH₂)_f-N(CH₂)_g-CONH(CH₂)_h-X; salts of docosanoic acid, tetracosanoic acid, hexacosanoic acid, octacosanoic acid or triacontanoic acid; R²O₂CCH₂(CHY)CO₂R², or R²O₂CCH₂CH₂(CHY)CO₂R²; where e=16-32, f, g, h =1-15, X = carboxylate, sulfonate, sulfate, phosphate, phosphonate; R² is a normal alkyl radical containing 16-24 carbon atoms, Y= -(CH₂)_k-X₁, -NHCO(CH₂)_k-X₁, -OCO(CH₂)_k-X₁,

-CH₂OCO(CH₂)_k-CO₂; k=1-6 and X₁=carboxylate, sulfate, or phosphate, said lamellar structure defining a void and having incorporated at least two binding compounds B¹ and B² independently selected from at least one of amino acids, peptides (1-20 amino acids), peptidomimics, monosaccharides, oligosaccharides (1-10), glycomimics, glycopeptides; anionic compounds; C- or O- monosaccharides and glycosides; flavonoids, isoflavonones; or C- or O- glucosides; wherein at least one of B1 [[and]] or B2 is anionic, B1 bound to said structure by anchor region[[s]] A¹ and B2 bound to said structure by anchor region A², A1 and A2 independently selected from at least one [[component of table 1]] of CH₃(CH₂)_a-W, CF₃(CH₂)_a-W, CF₃(CF₂)_a-W, CF₃(CF₂)_aCH₂CH₂-W, CH₃(CH₂)_a-O-(CH₂)_b-W, CF₃(CF₂)_a-O-(CH₂)_b-W, CH₃(CH₂)_a-S-(CH₂)_b-W, CH₃(CH₂)_a-S-S-(CH₂)_b-W; R¹O₂CCH₂(CHW)CO₂R¹; where a, b=16-32; R¹ is a normal alkyl radical containing 16-24 carbon atoms, and W = -O-, -CO-, -CO₂-, -O₂C-, -OCO-, -O₂CO-, -S-, -SO-, -OSO-, -OSO₂-, -SO₂-, -OPO₂H-, -NH-, -NHCO-, -NHCS-, -NHSO₂-, -PO₂H-, -PO₂-, or -OPO₂-; B1 and A1 linked via linker[[s]] L¹ and B2 and A2 linked via linker L², the linkers independently selected from at least one [[component of table 4]] of polysorbates, polyglycerols, polypeptides, polynucleotides, polysaccharides, polyvinylpyrrolidones, polyvinylalcohols, polyethyleneglycols, polyglycolate, polylactate, poly(ethyleneglycol)_p (p=40-150) and an effector molecule, said B¹ and B² binding to at least first and second affinity sites in said target site, wherein a position of B¹ and B² relatively self-adjust to form an OMMC ensemble resulting in [[enhanced]] cooperative binding of B¹ and B² to said affinity sites, wherein said effector molecule is provided to the target site.

68. (NEW) The method of claim 48 wherein B1 is at least one of an oligosaccharide derived from the glycan family of carbohydrate including but not limited to hyaluronic acid, heparin, chondroitin sulfate, dermatan; a mono or disaccharide including but not limited to galactose, fucose, glucose, mannose, and hyaluronic acid; and B2 is $-\text{O}(\text{CH}_2)_{1\text{or}2}\text{CO}_2^-$, $-\text{O}(\text{CH}_2)_{1\text{or}2}\text{SO}_3^-$, $-\text{O}(\text{CH}_2)_{1\text{or}2}\text{SO}_4^-$, or $-\text{O}(\text{CH}_2)_{1\text{or}2}\text{PO}_4^-$.

69. (NEW) The method of claim 67 wherein said effector molecule is selected from the group consisting of an echogenic agent, an ultrasound agent, a radionuclide, a radioligand, a paramagnetic agent, a chromophore, an optical agent, and an x-ray opacification agent.

70. (NEW) The method of claim 67 wherein said effector molecule is selected from the group consisting of an imaging agent.

71. (NEW) The method of claim 67 wherein said effector molecule is selected from the group consisting of a fluorocarbon gas, a fluorocarbon liquid, and a fluorophore.

72. (NEW) The method of claim 67 wherein the effector molecule is a chemotherapeutic agent, an antibiotic, and a cytotoxic agent.

73. (NEW) The method of claim 67 wherein the anionic compound is selected from at least one of $-(CH_2)_d-CO_2^-$, $-(CH_2)_d-SO_3^-$, $-(CH_2)_d-OSO_3^-$, $-(CH_2)_d-PO_3^{2-}$, $-(CH_2)_d-OPO_3^{2-}$ where $d=1-10$, $-Ar-SO_3^-$, DTPA, EDTA, DOTA, or EGTA.

74. (NEW) The method of claim 67 wherein the monosaccharides and glycosides are selected from at least one of glucose, mannose, fucose, galactose, glucosamine, mannosamine, galactosamine, or sialic acid.

75. (NEW) The method of claim 67 wherein the C- or O- glucosides are selected from at least one of rutin, neohesperidin dihydrochalcone, phloridizin, hesperidin, hesperidin methyl chalcone, naringenin, esculin, and carminic acid family.

76. (NEW) The method of claim 67 wherein the carminic acid family is selected from at least one of carmine, 18b-glycyrrhetic acid, or a salt thereof.

77. (NEW) The method of claim 48 wherein the anionic compound is selected from at least one of $-(CH_2)_d-CO_2^-$, $-(CH_2)_d-SO_3^-$, $-(CH_2)_d-OSO_3^-$, $-(CH_2)_d-PO_3^{2-}$, $-(CH_2)_d-OPO_3^{2-}$ where $d=1-10$, $-Ar-SO_3^-$, DTPA, EDTA, DOTA, or EGTA.

78. (NEW) The method of claim 48 wherein the monosaccharides and glycosides are selected from at least one of glucose, mannose, fucose, galactose, glucosamine, mannosamine, galactosamine, or sialic acid.

79. (NEW) The method of claim 48 wherein the C- or O- glucosides are selected from at least one of rutin, neohesperidin dihydrochalone, phloridizin, hesperidin, hesperidin methyl chalcone, naringenin, esculin, or carminic acid family.
80. (NEW) The method of claim 48 wherein the carminic acid family is selected from at least one of carmine, 18b-glycyrrhetic acid, or a salt thereof.